A Fresh Look At The Rut

When will the deer breed in your hunting area this year? That's a good question, because the answer depends on a number of variables. Some of these variables can be predicted well in advance, while others can't.

by Dr. James C. Kroll

Now wait a minute! Before you say to yourself, "Well, here's yet another boring article on the rut," keep reading. I guarantee you're going to learn something in this one.

Across North America, a lot of time and effort have been invested in an effort to gain a better understanding of the whitetail's breeding biology. (I know this because I'm one of those researchers who's spent years trying to come up with all the answers.) But why do we even need to understand the rut?

Well, the undeniable truth is that in most of the whitetail's range, the rut is the one time when a hunter's odds of harvesting a mature buck are significantly improved. Our studies at the Institute for White-tailed Deer Management and Research in Texas, plus several others by researchers such as Dr. Harry Jacobson at Mississippi State and Dr. Larry Marchinton at the University of Georgia, support the claim that mature bucks are, by nature, extremely nocturnal. Regardless of the amount of hunting pressure exerted on a deer population, older bucks simply don't spend a lot of the daytime moving around.

However, my graduate student, Robert Skinner, recently used sophisticated electronics to monitor the activity of wild bucks in a Louisiana study area, and the results of that work were clear: Even mature bucks move enough in daylight hours during the rut to be *somewhat* vulnerable to hunters. This is the only time many mature bucks ever let their guard down to any real degree, so it's critical that we as hunters know how to take advantage of this opportunity.

BASIC RUT BIOLOGY

The annual breeding period, or "rut," of white-tailed deer is a cyclic affair that involves distinct physiological changes in both bucks and does. Each year, I receive calls from hunters all over North America, and many are guaranteed to complain about some weird aspect of the rut in their areas. "When is our rut?" is the common opening remark.

That's a very good question, for its answer depends not only on the area but also on several other variables.



The rut is like a living creature, with a variable life expectancy. *The purpose of the rut is to synchronize breeding so that the fawns are born at exactly the right time of the year.* In many regions, factors such as spring flooding, droughts or other factors affecting forage conditions determine the optimum time of birth. For example, in much of the Midwest, the peak breeding takes place around Nov. 15 (*on average*), while in parts of South Florida, the rut — believe it or not — often peaks in mid-July! Since the gestation period for whitetails averages about 200 days, this translates to Midwestern fawns being born around the first of June, while the Florida fawns are born about the first of February. (Note: The South Florida rut can be early because bucks there shed velvet far earlier than do bucks in other regions of North America, and thus they're ready for breeding earlier as well.)

Asking when the rut occurs "in general" is ludicrous, considering the broad range of breeding dates over the range of the species. Not only that, it's even risky to tell someone exactly when the "average" date for peak rut occurs in a specific geographic area.

Why? The problem lies with the phrase "on average." There's actually no such thing as "average." If you lie with your feet in a freezer and your head in an oven, *on average* you should be comfortable — but how many folks would volunteer to be part of the demonstration? Averages don't mean much in terms of individual situations.

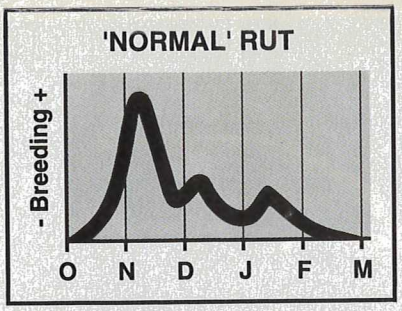
Although whitetails in a given location would "like" to breed during a certain period, numerous modifiers determine when breeding actually occurs in any single year. Does have a cyclic estrous period, encompassing about 25 1/2 days, and they begin this cycle sometime early in the so-called "pre-rut" period. A sensor in a doe's brain (connected to

Serious competition for breeding rights primarily occurs in whitetail herds that feature a well-balanced sex ratio and bucks scattered throughout the various age-classes. If such a population receives adequate nutrition, the rut will be an early, well-defined, intense affair. Photo by Curt Helmick.

the eyes) monitors the amount of darkness in a day. Somewhere near the autumnal equinox — the day on which the daily minutes of light and darkness are equal in the fall — the doe's brain triggers physiological preparation for the estrous cycle.

I often have said that the equinox "cocks the pistol" for the rut. But what actually "pulls the trigger" is very complex. My research colleague, Ben Koerth, and I currently are involved in the most comprehensive study to date on factors influencing both the rut and deer movement patterns. As you read this, we are pouring over thousands of observations, statistically relating deer movements to moon phases and position. All I can tell you at this time is that there definitely *are* scientifically and statistically accurate relationships.

Modifiers to the rut cycle include the physical condition of the does. A recent study by myself and Dr. Jacobson (which we presented in Scotland, at the International Conference on the Biology of Deer) raised some serious questions about the status of whitetail populations and the species' health over much of its range. In many areas, herds are showing definite signs of population decline, as the general health of individual animals is worsening. This is most often related to overpopulation, which translates to poor body condition, and thus significantly modifies the timing of the rut.



A healthy herd will have a well-defined first rut, with two smaller flurries to follow. Graphs by Allen Hansen.

Normally, there are three distinct peaks in the rut cycle. (See the accompanying graph.) The first peak occurs when mature does in good physical condition come into estrus, the period of ovulation, in which does become highly attractive to bucks. My research suggests that mostly dominant, mature does are bred at this time. (Yes, there are dominant does in a population, just as there are dominant bucks.) Most of the dominant does are bred during a period of three to seven days on the front end of the rut.

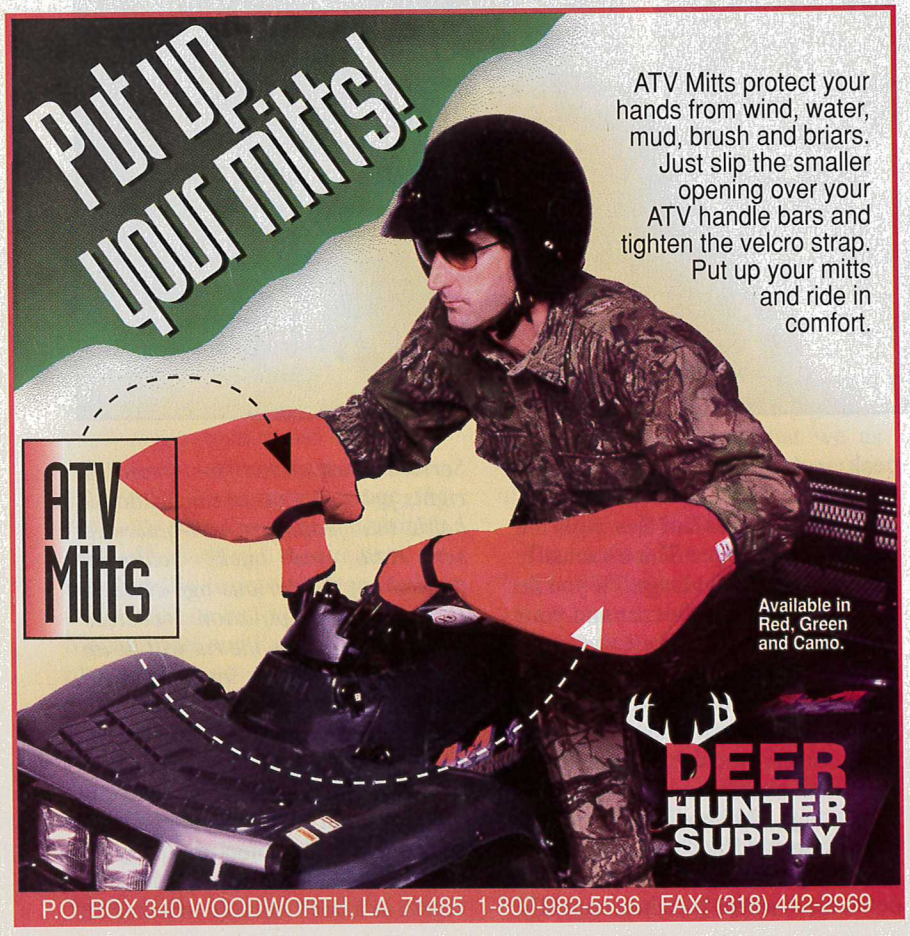
The second peak takes place about one estrous cycle later (approximately 25 days). Younger does, along with older does that for whatever reason were in poor condition as fall arrived, are bred at this time. Studies here at the Institute suggest that in highly populated herds, does which have nursed a fawn all summer have significantly less stored fat than those that have lost their fawns. (Ever observe a group of does from your stand — some sleek, gray and fat, others gaunt, fawn-colored and thin? What you probably saw were does of varied body condition because of the status of their fawns.)

The third, and hopefully last, flurry of breeding occurs when doe fawns and yearlings reach estrus. In most cases, it is a minor peak, barely perceptible by the average hunter. Unfortunately, in areas with extremely high deer populations, this last peak can even include mature does that were not bred previously. Our research warns that in states where as many as 70 percent of the bucks are being harvested annually, there just aren't enough bucks to go around. This translates to late breeding, which further translates to late fawning. If the fawns are not born at the optimum time, significant losses occur. That's precisely why we now are seeing areas in which fawn survival is as low as 30 percent (three fawns per 10 does).

Unknown to many hunters, bucks also have a rut cycle. The ideal situation is for the buck's cycle and the doe's cycle to coincide as much as possible. Like does, bucks are primed to come into breeding condition by their health status and the autumnal equinox.

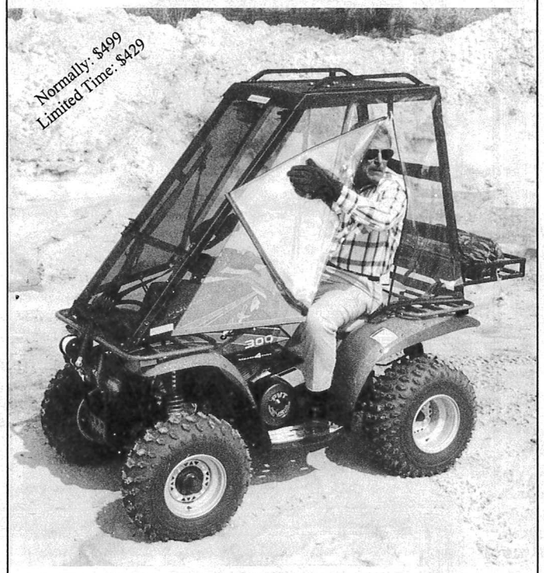
In areas where peak breeding deviates significantly from the traditional mid-November peak, it is the buck cycle that really determines when fawns are conceived. For example, South Texas does are fully capable of being bred much earlier than that region's traditional mid-December rut; however, the bucks do

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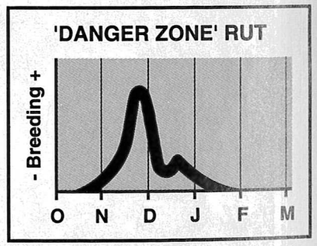
THE RUT ... *Continued*

not fully cycle until that time. This is one more way of ensuring proper fawning time.

Our graph shows the "normal" rut cycle discussed above. But again, the rut seemingly has a life of its own. There are two potential modifications to its timing. First, depending on the influence of lunar and condition factors, the rut slides back and forth over the calendar for a period of several days from year to year. It can slide forward (earlier) or slip backward (later), depending on these factors.

And, as noted, body condition also plays a critical role. I annually manage almost 200,000 acres for trophy whitetails. Over the course of my work, I discovered *it is possible to move the rut forward in some areas by reducing the population.* How?

As we've discussed, in heavily populated areas, does generally are in poor condition. After all, dense populations tend to reduce the availability of high-quality forages, leading to reduced body condition, which in turn tends to delay the rut. By reducing the number of mouths on the range, we can improve herd health. This allows both bucks and does to better synchronize breeding, effectively pushing the rut forward by about one 25-day estrous cycle. (Other biologists have reported similar findings, by the way.)



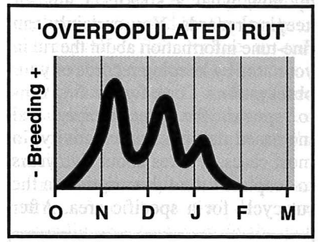
When herd density reaches the saturation point, the start of the rut is delayed, as is the second flurry of breeding.

So, the first response by a stressed herd is to slide the peak rut later. As the population increases even more, the rut not only becomes later, it tends to flatten out (see graph), or even split in two. My 1994-95 research in the Pineywoods of East Texas showed a rut with a "split personality" — that is, the normal-peaked first estrus turned into two distinct peaks about one cycle apart.

This type of flat cycle is called a "trickle rut" by most biologists and hunters. And if you've never had the misfortune to hunt one, believe me when I say there's nothing more frustrating!

HUNTING THE RUT

OK, you say, the research results presented thus far are all well and good — but how can any of this improve my chances at a trophy buck? First, you need to be aware of



As herd density moves beyond the saturation point, there are two similar peaks of breeding, one normal cycle apart. This results in a high number of late births.

both the rut cycle in your area and the modifiers that affect it. The best place to start is by contacting the appropriate game department.

In the United States, every time you purchase either a firearm or ammunition, you pay a federal excise tax under the Pittman-Robertson Act. These funds are used to support activities by each state's wildlife agency, including research. Almost every state, as well as Canadian provinces, is conducting research (or has already done so) on the breeding chronology of whitetails in each of its ecological regions or management units. A simple request to your wildlife agency will produce some very good information about your rut. (Request *P-R Performance Reports* on all reproductive studies.)

Examine these materials for the area you hunt. They should give you a good indication of the "normal" rut cycle. It then is a simple matter to arrange your hunting schedule to best coincide with what the deer are doing in your territory.

However, you should be aware that some state and provincial wildlife agencies intentionally schedule opening week of gun season to fall after the normal peak rut. Others prohibit the use of

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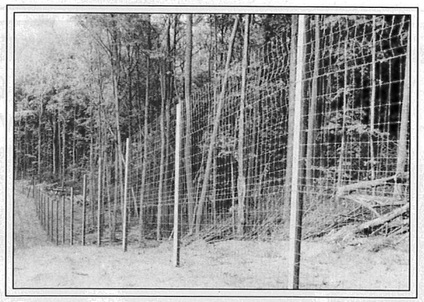
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